No. 8300138

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Holden's Foundation Seeds, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN

'LH143'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington *this* 26th *day of* October *in the year of our Lord one thousand nine hundred and* eighty-four.

Attest:

Kenneth R. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

John R Block
Secretary of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

FORM APPROVED
OMB NO. 40-R3822

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY	1b. VARIETY NAME	FOR OFFICIAL USE ONLY
Ex 664	LH143	PV NUMBER 8300138

2. KIND NAME	3. GENUS AND SPECIES NAME	FILING DATE	TIME
Field Corn	Zea Maize	5/23/83	2:30 P.M.
4. FAMILY NAME (BOTANICAL)	**5. DATE OF DETERMINATION**	**FEE RECEIVED**	**DATE**
Gramineae		$ 1,000 $ 500.00	5/23/83 9/28/84

6. NAME OF APPLICANT(S)	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*	8. TELEPHONE AREA CODE AND NUMBER
Holden's Foundation Seeds, Inc.	R.R. #2, Box 839 Williamsburg, Iowa 52361	319-668-1100

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*	10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION	11. DATE OF INCORPORATION
Corporation	Iowa	1968

12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:
Mark Armstrong
Box 839
Williamsburg, Iowa 52361

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- [X] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [X] 13B. Exhibit B, Novelty Statement.
- [X] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*
- [X] 13D. Exhibit D, Additional Description of the Variety.

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [ ] YES [X] NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?	14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED?
[ ] YES [X] NO	[ ] FOUNDATION [ ] REGISTERED [ ] CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? [X] YES [ ] NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

5/20/83
(DATE)

Harold Holden
(SIGNATURE OF APPLICANT)

(DATE)

(SIGNATURE OF APPLICANT)

FORM GR-470 (1-78)

Exhibit A

Origin and Breeding History of the Variety LH143

LH143 was developed by a backcross breeding method.

LH143 = Ex664 = A632Ht(C-ST)^3 = A635Ht x A632Ht)(A632Ht

Row No.	Pedigree	Location	Year
7-4622	A635Ht x A632Ht)(A632Ht	Hawaii	1977
7-7916	A635Ht x A632Ht)(A632Ht	Hawaii	1977
8-2296	A632Ht (C-ST)^3	Hawaii	1978
8-5197	A632Ht (C-ST)^3	Hawaii	1978
9-205	A632Ht (C-ST)^3	Hawaii	1979
19632	A632Ht (C-ST)^3	Iowa	1979
1012	A632Ht (C-ST)^3	Hawaii	1979-80
28944	Ex664	Iowa	1981
DeCoite Field	LH143	Hawaii	1981-82
DeCoite Field	LH143 (Replant)	Hawaii	1981-82
Olsen Field	LH143	Iowa	1982

Exhibit A LH143

To develop LH143 selections were made after back crossing to A632.

The plants were saved according to their ability to maintain male sterility in C type cytoplasms.

There are no observable variants in this inbred.

Exhibit A

Uniformity Statement

I observed LH143 during the three generations it has been increased; Iowa 1981 Nursery, row 28944; Hawaii-DeCoite increase field 1981-82; and our 1982 Iowa Olsen field production. In each of the increases the seed from the previous generation was planted. The line is very stable from generation to generation, and it is very uniform.

Richard J. Miller

Richard J. Miller
Plant Pathologist/Plant Breeder

Supplement to Exhibit B

LH143 most closely resembles 'LP1 NR Ht'; however, the tassel is the biggest phenotypic difference between the two. 'LH143' has a wider tassel ~~brand~~ BRANCH angle than 'LP1NR Ht'.

Supplement to Exhibit ~~A~~ B RJS 4/24/84

'LH143' is earlier than 'LP1 NR Ht' according to the mid silk dates. There is a difference of eight days.

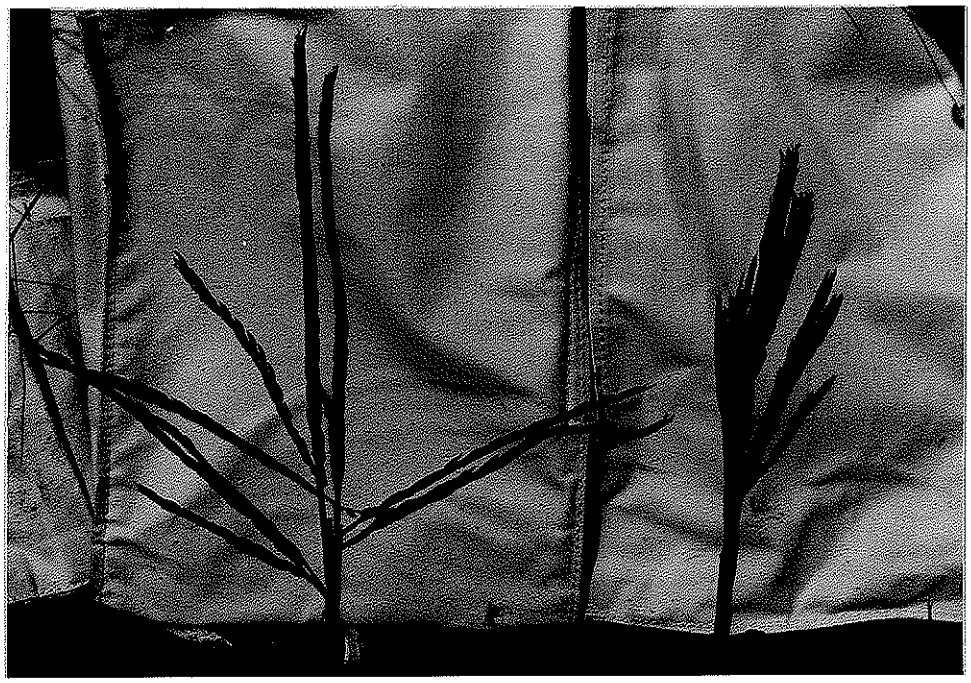
'LH143' has narrower leaves than 'LP1 NR Ht'. 'LP1 NR Ht' was more susceptible to leaf disease and "buggy whipping" than 'LH143'.

The tassel glumes of both inbreds are purple and green, but the glumes of 'LH143' are more purple than the glumes of 'LP1 NR Ht'. The center spike of 'LH143' is longer and has more lateral branches than 'LP1 NR Ht'.

Photograph 1

The 'LP1 NR Ht' leaf is on the left and the 'LH143 leaf is on the right.

Supplement to Exhibit B R/S 4/5/84



Photograph 1

'LH143' tassel on the left and 'LP1 NR Ht' tassel on the right

The most distinguishing characteristic between 'LH143' and 'LP1 NR Ht' is the tassel. Note in the photograph above that the 'LH143' tassel has a wider branch angle than the 'LP1 NR Ht' tassel. The 'LP1 NR Ht' tassel is much more erect.

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-28
(2-15-74)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C
(Corn)

OBJECTIVE DESCRIPTION OF VARIETY

CORN *(ZEA MAYS)*

NAME OF APPLICANT(S)
Holden's Foundation Seeds, Inc.

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*
R. R. #2, Box 839
Williamsburg, Iowa 52361

FOR OFFICIAL USE ONLY
PVPO NUMBER 8300138

VARIETY NAME OR TEMPORARY DESIGNATION
LH143

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. TYPE:

[2] 1 = SWEET 2 = DENT 3 = FLINT 4 = FLOUR 5 = POP 6 = ORNAMENTAL

2. REGION WHERE BEST ADAPTED IN THE U.S.A.:

[7] 1 = NORTHWEST 2 = NORTHCENTRAL 3 = NORTHEAST 4 = SOUTHEAST
5 = SOUTHCENTRAL 6 = SOUTHWEST 7 = MOST REGIONS

3. MATURITY (In Region of Best Adaptability):

(Under "comments" (pg. 3) state how heat units were calculated)

[6][2]	DAYS FROM EMERGENCE TO 50% OF PLANTS IN SILK	[1][3][8][5] HEAT UNITS
[0][0]	DAYS FROM 50% SILK TO OPTIMUM EDIBLE QUALITY	[0][0][0][0] HEAT UNITS
[0][0]	DAYS FROM 50% SILK TO HARVEST AT 25% KERNEL MOISTURE	[0][0][0][0] HEAT UNITS

4. PLANT:

[2][2][5] CM. HEIGHT (To tassel tip)

[0][9][7] CM. EAR HEIGHT (To base of top ear)

[1][4] CM. LENGTH OF TOP EAR INTERNODE

Number of Tillers:

[1] 1 = NONE 2 = 1–2 3 = 2–3 4 = > 3

Number of Ears Per Stalk:

[1] 1 = SINGLE 2 = SLIGHT TWO-EAR TENDENCY
3 = STRONG TWO-EAR TENDENCY 4 = THREE-EAR TENDENCY

Cytoplasm Type:

[1] 1 = NORMAL 2 = "T" 3 = "S" 4 = "C" 5 = OTHER (Specify) _____

5. LEAF (Field Corn Inbred Examples Given):

Color: 5GY 4/6 = Munsell Color Chart For Plant Tissues

[ ] 1 = LIGHT GREEN (HY) 2 = MEDIUM GREEN (WF9) 3 = DARK GREEN (B14) 4 = VERY DARK GREEN (K166)

Angle from Stalk (Upper half):

[3] 1 = < 30° 2 = 30–60° 3 = > 60°

Sheath Pubscence:

[1] 1 = LIGHT (W22) 2 = MEDIUM (WF9)
3 = HEAVY (OH26)

Marginal Waves:

[2] 1 = NONE (HY) 2 = FEW (WF9) 3 = MANY (OH7L)

Longitudinal Creases:

[2] 1 = ABSENT (OH51) 2 = FEW (OH56A)
3 = MANY (PA11)

Width:

[0][7] CM. WIDEST POINT OF EAR NODE LEAF

Length:

[0][8][6] CM. EAR NODE LEAF

[1][3] NUMBER OF LEAVES PER MATURE PLANT

6. TASSEL:

[0 9] NUMBER OF LATERAL BRANCHES

Branch Angle from Central Spike:

[3] 1 = < 30° 2 = 30–40° 3 = > 45°

Pendunce Length:

[0 0] CM. FROM TOP LEAF TO BASAL BRANCHES

Pollen Shed:

[2] 1 = LIGHT (WF9) 2 = MEDIUM 3 = HEAVY(KY21)

[4] Anther Color:
[4] Glume Color:
1 = YELLOW 2 = PINK 3 = RED 4 = PURPLE 5 = GREEN
6 = OTHER (Specify) _____

Pollen Restoration for Cytoplasms (o = Not Tested, 1 = Partial, 2 = Good)

[0] "T" [0] "S" [0] "C" [ ] OTHER (Specify Cytoplasm and degrees of restoration) _____

7. EAR (Husked Ear Data Except When Stated Otherwise):

[1 3] CM LENGTH [0 3] MM. MID-POINT DIAMETER [4 6] GM. WEIGHT

Kernel Rows:

[1] 1 = INDISTINCT 2 = DISTINCT [1 4] NUMBER

[1] 1 = STRAIGHT 2 = SLIGHTLY CURVED 3 = SPIRAL

Silk Color (Exposed at Silking Stage):

[3] 1 = GREEN 2 = PINK 3 = SALMON 4 = RED

Husk Color:

[1] FRESH
[6] DRY
1 = LIGHT GREEN 2 = DARK GREEN 3 = PINK
4 = RED 5 = PURPLE 6 = BUFF

Husk Extention: (Harvest Stage)

[3] 1 = SHORT (Ears Exposed) 2 = MEDIUM (Barely Covering Ear)
3 = LONG (8–10CM Beyond Ear Tip)
4 = VERY LONG (> 10 CM)

Husk Leaf:

[1] 1 = SHORT (< 8 CM) 2 = MEDIUM (8–15 CM)
3 = LONG (> 15 CM)

Shank:

[0 6] CM LONG [8] NO. OF INTERNODES

Position at Dry Husk Stage:

[2] 1 = UPRIGHT 2 = HORIZONTAL 3 = PENDENT

Taper:

[1] 1 = SLIGHT 2 = AVERAGE 3 = EXTREME

Drying Time (Unhusked Ear):

[2] 1 = SLOW 2 = AVERAGE 3 = FAST

8. KERNEL (Dried):

Size (From Ear Mid-Point):

[1 0] MM LONG [0 7] MM. WIDE [0 5] MM. THICK

Shape Grade (% Rounds)

[5] 1 = < 20 2 = 20–40 3 = 40–60 4 = 60–80 5 = > 80

8. KERNEL (Dried) :

[1] **Pericarp Color:** 1 = COLORLESS 2 = RED-WHITE CROWN 3 = TAN 4 = BRONZE
5 = BROWN 6 = LIGHT RED 7 = CHERRY RED
8 = VARIEGATED (Describe) _____

[1] **Aleurone Color:** 1 = HOMOZYGOUS 2 = SEGREGATING (Describe) _____

[~~3~~ 1] RfS 87
1 = WHITE 2 = PINK 3 = TAN 4 = BROWN 5 = BRONZE 6 = RED
7 = PURPLE 8 = PALE PURPLE 9 = VARIEGATED (Describe) _____

[~~1~~ 3] RfS **Endosperm Color:** 1 = WHITE 2 = PALE YELLOW 3 = YELLOW 4 = PINK-ORANGE 5 = WHITE CAP.

Endosperm Type:

[3] 1 = SWEET (su1) 2 = EXTRA SWEET (sh2) 3 = NORMAL STARCH 4 = HIGH AMYLOSE STARCH
5 = WAXY STARCH 6 = HIGH PROTEIN 7 = HIGH LYSINE 8 = OTHER (Specify) _____

[2][1] GM. WEIGHT /100 SEEDS (Unsized Sample)

9. COB:

[2][0] MM. DIAMETER AT MID-POINT

Strength:

[2] 1 = WEAK 2 = STRONG

Color:

[3] 1 = WHITE 2 = PINK 3 = RED 4 = BROWN
5 = VARIEGATED 6 OTHER (Specify) _____

10. DISEASE RESISTANCE (0 = Not Tested, 1 = Susceptible, 2 = Resistant):

[0] STALK ROT (Diplodia)	[0] STALK ROT (Fusarium)	[0] STALK ROT (Gibberella)
[0] NORTHERN LEAF BLIGHT	[0] SOUTHERN LEAF BLIGHT	[0] SMUT
[0] SOUTHERN RUST	[0] CORN SMUT	[0] BACTERIAL WILT
[0] BACTERIAL LEAF BLIGHT	[0] MAIZE DWARF MOSAIC	[0] STUNT
[0] OTHER (Specify)		

11. INSECT RESISTANCT (0 = Not Tested, 1 = Susceptible, 2 = Resistant):

[0] CORNBORER	[0] EARWORM	[0] SAPBEETLE	[0] APHID
[0] ROOTWORM (Northern)	[0] ROOTWORM (Western)		
[0] ROOTWORM (Southern)	[0] OTHER (Specify) _____		

12. VARIETIES MOST CLOSELY RESEMBLING THAT SUBMITTED FOR THE CHARACTERS GIVEN:

CHARACTER	VARIETY	CHARACTER	VARIETY
Maturity	A632Ht	Kernel Type	A632Ht
Plant Type	A632Ht	Quality (Edible)	---
Ear Type	A632Ht	Usage	A632Ht

REFERENCES:

U.S. Department Agriculture. Yearbook 1937.
Corn: Culture, Processing, Products. 1970 Avi Publishing Company, Westport, Connecticut. (Numerous (Authors)
Emerson, R.A., G.W. Beadle, and A.C. Fraser. A Summary of Linkage Studies in Maize.Cornell A.E.S., Mem. 180. 1935.
The Mutants of Maize. 1968. Crop Science Society of America. Madison, Wisconsin.
Stringfield, G.H. Maize Inbred Lines of Ohio, Ohio A.E.S. Bul. 831. 1959.
Butler, D.R. 1954 — A System for the Classification of Corn Inbred Lines — PhD. Thesis, Ohio State University.

COMMENTS:

8300138

Corn Application No. 8300138,'LH143'

Supplement to Exhibit ~~3~~ D RJS 4/24/84

'LH143' is ~~most~~ similar to 'A632Ht.'

Corn application No. 8300138, 'LH143'
Supplement to Exhibit ~~B~~ D rjs

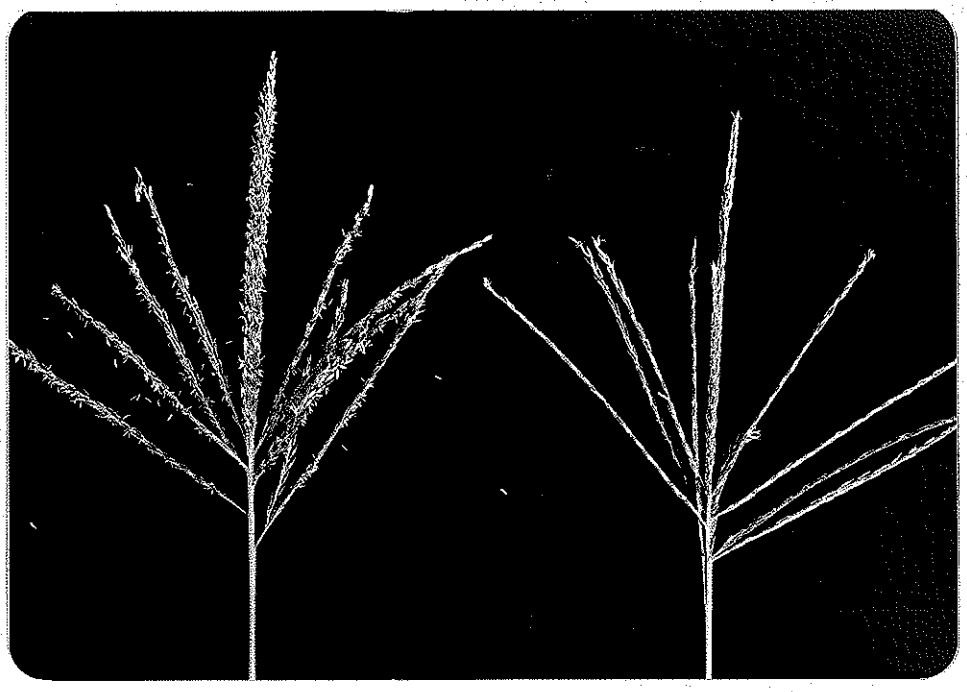


Figure 1.
'A632PAms'Ht tassel on the left and 'LH143PAms' tassel on the right.

Note in figure 1 above that LH143PAmsHt maintains male sterility with no breakage or leakage of anthers. A632PAmsHt on the other hand does break and exposes anthers along with viable pollen.

Exhibit ~~B~~ D

Novelty Statement

The most distinguishing characteristic between LH143 and A632Ht is that when LH143 is incorporated into C-type cytoplasm, LH143 is completely male sterile. Whereas, when A632Ht is incorporated into C-type cytoplasm, it will break male sterility and shed viable pollen.

Exhibit D

Additional Description of the Variety LH143

In tests last summer (1982) LH143 was a day earlier than A632Ht in mid-pollen and mid-silk. In flowering tests run over the last two years LH143 has been consistently earlier than A632Ht. In the 1981 test it was earlier than A632Ht by as much as four days. These differences are also influenced by the date of planting. The earlier the planting date the greater the difference in mid-pollen and mid-silk between the two.

There is also a slight difference in plant height between the two inbreds. LH143 is shorter than A632Ht.

Under certain environmental conditions LH143 has a tendency to have more husk leaves than A632Ht.